Fresenius' Journal of Analytical Chemistry

Continuation of Fresenius' Zeitschrift für Analytische Chemie

Editors W. Fresenius and I. Lüderwald

Supported by
Fachgruppe Analytische Chemie der Gesellschaft Deutscher Chemiker
Represented by
K. Ballschmiter, H. Bode, H. Günzler, K. Heumann, G. Tölg

International Editorial Board

G. den Boef, Amsterdam, The Netherlands
D. T. Burns, Belfast, UK
A. Cedergren, Umeå, Sweden
K. Doerffel, Merseburg, FRG
M. Grasserbauer, Wien, Austria
D. M. Hercules, Pittsburgh, PA, USA
S. Ikeda, Suta, Japan
H. Malissa, Wien, Austria
L. Niinistö, Espoo, Finland
E. Pungor, Budapest, Hungary
S. Tsuge, Nagoya, Japan
M. Valcárcel, Cordoba, Spain
Yu. A. Zolotov, Moscow, USSR

Volume 341 · 1991

D71
F73

Springer International

Advisory Board

A. Benninghoven, Münster, FRG
B. A. Bidlingmeyer, Hopkinton, MA, USA
C. Cámara, Madrid, Spain
G. D. Christian, Seattle, WA, USA
K. Danzer, Jena, FRG
Y. Gohshi, Tokyo, Japan
W. R. Heinemann, Cincinnati, OH, USA
G. M. Hieftje, Bloomington, IN, USA
T. Imasaka, Fukuoka, Japan
F. Ingman, Stockholm, Sweden
E. Jellum, Oslo, Norway
H. M. Kingston, Pittsburgh, PA, USA
J. A. van Leeuwen, Nijmegen, The Netherlands
E. Lindner, Budapest, Hungary
R. Niessner, München, FRG
H. Oechsner, Kaiserslautern, FRG
H. M. Ortner, Darmstadt, FRG
M. Otto, Freiberg, FRG
B. Salbu, Aas-NLH, Norway
B. Spivakov, Moscow, USSR
J. F. van Staden, Pretoria, South Africa
B. G. M. Vandeginste, Vlaardingen, The Netherlands
B. Welz, Überlingen, FRG
St. A. Wise, Gaithersburg, MD, USA
O. S. Wolfbeis, Graz, Austria
P. G. Zambonin, Bari, Italy

Fresenius' Journal of Analytical Chemistry

Continuation of Fresenius' Zeitschrift für Analytische Chemie

---

Begründet 1862 und herausgegeben bis Band 20 (1881) von *C. Remigius Fresenius*, bis Band 36 (1897) von *C. Remigius* und *Heinrich Fresenius*, Band 37 – 58 herausgegeben von *Heinrich* und *Wilhelm Fresenius* und *Ernst Hintz*, Band 59 (1920) bis Band 105 von *Wilhelm, Remigius* und *Ludwig Fresenius*, Band 105 (1936) von *Remigius* und *Ludwig Fresenius*, Band 106 bis 127 (1944) von *Remigius Fresenius*, Band 128 (1948) herausgegeben von *A. Kurtenacker*, Band 129 (1949) bis Band 187 (1962) von *W. Fresenius* und *A. Kurtenacker*, Band 188 (1962) bis Band 310 (1982) von *W. Fresenius* und ab Band 311 (1982) von *W. Fresenius* und *I. Lüderwald*.

Bis Band 59 (1919) Wiesbaden, C. W. Kreidel, Band 59 – 62 (1922) Wiesbaden, C. W. Kreidel, und München, J. F. Bergmann, Band 63 – 127 (1944) München, J. F. Bergmann, ab Band 128 (1948) Berlin, Springer, und München, Bergmann.

Copyright

Submission of a manuscript implies: that the work described has not been published before (except in the form of an abstract or as part of a published lecture, review, or thesis); that it is not under consideration for publication elsewhere; that its publication has been approved by all coauthors, if any, as well as by the responsible authorities at the institute where the work has been carried out; that, if and when the manuscript is accepted for publication, the authors agree to automatic transfer of the copyright to the publisher; and that the manuscript will not be published elsewhere in any language without the consent of the copyright holders.

All articles published in this journal are protected by copyright, which covers the exclusive rights to reproduce and distribute the article (e.g., as offprints), as well as all translation rights. No material published in this journal may be reproduced photographically or stored on microfilm, in electronic data bases, video disks, etc., without first obtaining written permission from the publisher.

The use of general descriptive names, trade names, trademarks, etc., in this publication, even if not specifically identified, does not imply that these names are not protected by the relevant laws and regulations.

While the advice and information in this journal is believed to be true and accurate at the date of its going to press, neither the authors, the editors, nor the publisher can accept any legal responsibility for any errors or omissions that may be made. The publisher makes no warranty, express or implied, with respect to the material contained herein.

Special regulations for photocopies in the USA

Photocopies may be made for personal or in-house use beyond the limitations stipulated under Section 107 or 108 of U.S. Copyright Law, provided a fee is paid. This fee is US $ 0.20 per page per copy, plus a basic fee of US$2.00 per article. All fees should be paid to the Copyright Clearance Center, Inc., 21 Congress Street, Salem, MA 01970, USA, stating the ISSN 0937-0633, the volume, and the first and last page numbers of each article copied. The copyright owner's consent does not include copying for general distribution, promotion, new works, or resale. In these cases, specific written permission must first be obtained from the publisher.

Springer-Verlag, Berlin Heidelberg New York London Paris Tokyo
J. F. Bergmann Verlag, München
Printed in Germany by Wiesbadener Graphische Betriebe GmbH, Wiesbaden

© Springer-Verlag, Berlin Heidelberg 1991

Contents of volume 341

Working Party on Analytical Chemistry A 7

Editorial

Grasserbauer M: Competition "Analytical Chemistry – Today's Definition and Interpretation" A 9

Original papers

Abstreiter G, see Kolb G, et al. 166
Ache HJ, see Ewinger H-P, et al. 17
Ache HJ, see Schmidt UC, et al. 260
Alabart JR, see Castillo JR, et al. 611
Albrecht J, see Hupfer A, et al. 439
Alexeyev AP, Zaporozchenko VI: Electron probe X-ray microanalysis as a non-destructive method for the quantitative determination of ion-implanted impurities in silicon 601
Ammann N, see Karduck P, et al. 315
Anderle M, see Moro L, et al. 20
Anderson O, Bange K: Electron Spectroscopy (ESCA) on technical oxidic thin films prepared by different methods 74
Anderson O, see Sprenger D 116
Androsch FM, see Angeli J, et al. 140
Angeli J, Kaltenbrunner T, Androsch FM: Quantitative depth-profiling with GDOS: application to ZnNi-electrogalvanized steel sheets 140
Angermann H-H, see Hörz G 408

Baalmann A, Schlett V: AES and XPS investigations for the topochemical characterization of dope elements on WC-powders 200
Bacci L, see Moro L, et al. 20
Baiker A, see Schild C, et al. 395
Baiker A, see Schraml-Marth M, et al. 87
Bange K, see Anderson O 74
Bartko A, see Stulík J, et al. 645
Barzen I, see Dötter W, et al. 353
Barzen I, see Keller G, et al. 349
Baschenko OA, Tyzykhov MA, Nefedov VI: Determination of depth-profiles in surface layers of solids by angular resolved X-ray photoelectron spectroscopy 597
Baudenbacher F, see Ziegler C, et al. 308
Baumeyer T, see Crespi F, et al. 644
Becker C, see Fries T, et al. 193
Becker CH: On the use of single-photon ionization for inorganic surface analysis 3
Becker S, see Lorenz M, et al. 292
Beckmann P, see Geiger J-F, et al. 25
Behner H, Gieres G, Sipos B: Characterization of sputter-deposited YBaCuO films by X-ray photoelectron spectroscopy 301
Beltran JL, see Rauret G, et al. 631
Berresheim K, Mattern-Klosson M, Wilmers M: A standard form of spectra for quantitative ESCA-analysis 121
Betz G, see Husinsky W, et al. 12
Betz W, see Hoinkis O, et al. 101
Bicknell-Tassius RN, see Wenzel M, et al. 189
Bilger G, see Eicke A 214
Böhmer M, see Fries T, et al. 193
Böttner H, see Stocker W, et al. 184
Borchardt G, Scherrer S, Weber S: Charge effects during surface analysis of poorly conducting inorganic materials 255
Borchardt G, see Jedlinski J, et al. 432
Bothe H-K, see Lorenz M, et al. 292
Bredendiek-Kämper S, Jenett H, Bubert H: AES investigation of thermally sprayed Al_2O_3 coatings on steel 346
Brennfleck K, see Naoumidis A 235
Brüning T, see Züchner H 150
Brumm M, see Grabke HJ, et al. 378
Bubert H, Burba P, Klockenkämper R, Schönborn A, Wielunski M: Dose determination of nickel implantations in silicon wafers 245
Bubert H, see Bredendiek-Kämper S, et al. 346
Bubert H, see Schönborn A, et al. 241
Burba P, see Bubert H, et al. 245
Burba P: Anion exchangers functionalized by chelating reagents (AnChel) for preconcentration of trace elements: Capabilities and limitations 709

Cammann K, see Robecke M 555
Cantow H-J, see Stocker W, et al. 184
Castillo JR, Mir JM, Perez-Arantegui J, Tejada J, Alabart JR: Study of the provenance of *Terra sigillata* by Mössbauer spectroscopy 611
Cerva H, see Weitzel I, et al. 43
Christensen JM, Olsen E: Estimation of exposure levels by measurements and models 573
Clausing E, see Winiarski A, et al. 296
Crespi F, Baumeyer T, Möbius C, Dittrich J: Simultaneous in vivo monitoring of dopamine and serotonin by differential pulse conditioning voltammetry with NA-CRO microbiosensors 644

Danzer K, Schubert M, Liebich V: Information theory in analytical chemistry. III. Distribution-analytical investigations 511
Deutschmann L, Suhr H, Krug D, Straub U: Improved adhesion of copper on Al_2O_3 339
Dietrich D, see Hupfer A, et al. 439
Dietze H-J, see Lorenz M, et al. 292
Dittrich J, see Crespi F, et al. 644
Djurdjic V, see Todorovic M, et al. 723
Dobrileit R, see Züchner H, et al. 219
Doerffel K, Herfurth G, Liebich V, Wendlandt E: The shape of CUSUM – an indicator for tendencies in a time series 519
Dötter W, Barzen I, Keller G, Erz R, Ulrich S, Jung K, Ehrhardt H: Determination of energy and mass distributions of ions and neutral particles in magnetron-ionplating 353
Dötter W, see Keller G, et al. 349
Dowsett MG: The application of surface analytical techniques to silicon technology 224
Drevenkar V, see Vasilić Z, et al. 732
Dyrek K, see Madej A, et al. 707

Ehinger M, see Wenzel M, et al. 189
Ehrhardt H, see Dötter W, et al. 353
Ehrhardt H, see Keller G, et al. 349
Eicke A, Bilger G: SIMS for hydrogen quantification and structural analysis of amorphous silicon germanium compounds 214
Eisenreich N, see Kolarik V, et al. 436
Engel W, see Kolarik V, et al. 436
Engewald W, Knobloch T, Haufe G, Müller M, Pohris V: A novel method for terpene pattern determination of essential oils by selectivity tuning in GC 641

Erz R, see Dötter W, et al. 353
Erz R, see Keller G, et al. 349
Esser HG, see Karduck P, et al. 315
Eugster R, see Spichiger UE, et al. 727
Ewinger H-P, Goschnick J, Ache HJ: Analysis of organic compounds with SNMS 17

Fichtner M, see Schmidt UC, et al. 260
Fingler S, see Vasilić Z, et al. 732
Flügge J, see Freiburg A, et al. 427
Foster M, see Reiter G, et al. 284
Franzreb K, Wucher A, Oechsner H: Saturation and fragmentation in non resonant laser postionization of sputtered atoms and molecules 7
Freiburg A, Jäger W, Flügge J: Investigation of oxide films on ferritic stainless steel 427
Freisinger J, see Walkow B, et al. 248
Fries T, Becker C, Böhmer M, Wandelt K: A fully computerized modular scanning tunneling microscope system 193
Führer H, see Gara S, et al. 112

Gärtner H, see Stobiecki F, et al. 365
Gara S, Stingeder G, Hutter H, Führer H, Grasserbauer M: Quantitative characterization of oxygen precipitates in CZ-silicon with secondary ion mass spectrometry 112
García-Antón J, see Monzó J, et al. 606
Gauglitz G, Nahm W: Observation of spectral interferences for the determination of volume and surface effects of thin films 279
Gebhardt R, Krehan A, Rauh M, Wißmann P: Structure investigations of pure and partially oxidized copper films 332
Gehrig P, see Spichiger UE, et al. 727
Geiger J-F, Beckmann P, Schierbaum KD, Göpel W: Interaction of Pd-overlayers with SnO_2: comparative XPS, SIMS, and SNMS studies 25
Gericke M, Lill T, Trapp M, Richter C-E, Hupfer A: Surface roughening during depth profiling by Secondary Ion Mass Spectrometry (SIMS) in GaAlAs and GaAs 31
Giber J, see Hárs G, et al. 57
Giber J, see Mezey LZ, et al. 383
Gieres G, see Behner H, et al. 301
Gijbels R, see Jenett H, et al. 265
Giménez-Izquierdo J, Guiteras J, Izquierdo A, Prat MD: Spectrofluorimetric determination of clioquinol in pharmaceutical preparations 638
Gnaser H, Oechsner H: SIMS depth profile analysis using MCs^+ molecular ions 54
Göpel W, see Geiger J-F, et al. 25
Göpel W, see Kirner UK, et al. 416
Göpel W, see Wiemhöfer HD 106
Göpel W, see Ziegler C, et al. 308
Gonser U, Schaaf P: Surface phase analysis by Conversion X-ray and Conversion Electron Mössbauer spectroscopy 131
Goschnick J, see Ewinger H-P, et al. 17
Goschnick J, see Schmidt UC, et al. 260
Grabke HJ, Brumm M, Steinhorst M: Interfacial analyses for elucidation of the intergranular disintegration upon oxidation of intermetallic phases 378
Grabke HJ, see Wiemer D 402
Grallath E, see Jenett H, et al. 265
Grandi FZ, Szpyrkowicz L: Sampling and analysis of rain: methods and results of the Venice regional network 625
Grasserbauer M, see Gara S, et al. 112
Gries WH, see Hoinkis O, et al. 101
Griesbach P, see Ternes T, et al. 79
Grm A, see Leskovšek H, et al. 720
Grötzschel R, see Liebich V 325
Große G, see Oswald S, et al. 180
Grübmeier H, see Nickel H, et al. 421
Gütlich P, see Meisel W, et al. 289
Gütlich P, see Ternes T, et al. 79
Guiñón JL, see Monzó J, et al. 606
Guiteras J, see Giménez-Izquierdo J, et al. 638
Guntur D, see Nickel H, et al. 421
Gutschke R, see Weisbrod U, et al. 83

Haase E, see Spichiger UE, et al. 727
Halbritter J, Leiste H, Mathes HJ, Walk P: ARXPS – Studies of nucleation and make-up of sputtered TiN-layers 320
Hanekamp LJ, see Lisowski W, et al. 196
Hanžel D, see Ternes T, et al. 79
Hárs G, Sólyom A, Giber J: Quadrupole mass spectrometer for residual gas analysis and SIMS application 57
Haufe G, see Engewald W, et al. 641
Hausbeck R, see Krivan V, et al. 550
Hebeda EH, see Walczyk T, et al. 537
Heiland W, see Priggemeyer S, et al. 343
Herfurth G, see Doerffel K, et al. 519
Herzog H-J, see Jorke H, et al. 176
Heumann KG, see Walczyk T, et al. 537
Hickel W, see Knoll W, et al. 272
Hörz G, Angermann H-H: Surface reaction kinetics as a probe for studying carbon-induced surface structural changes on nickel and Ni-Cr alloys 408
Hösler W, see Weitzel I, et al. 43
Hofer W, see Mezey LZ, et al. 383
Hoinkis O, Miethe K, Betz W, Gries WH: Application of infrared luminescence microscopy for ion beam diagnostics and for measurement of ion dose densities from 10^9 to 10^{16} cm^{-2} 101
Hüttenbach S, see Reiter G, et al. 284
Hupfer A, Albrecht J, Dietrich D: Electron spectroscopic investigation (AES/SAM, XPS) of electroplated Ag layers on LED-CuSn-lead frames: Combined phenomena of segregation and corrosion 439
Hupfer A, see Gericke M, et al. 31
Husinsky W, Wurz P, Traunfellner A, Betz G: The emission of secondary clusters and its relevance for analytical Laser-SNMS 12
Hutter H, see Gara S, et al. 112

Irgum K, see Tesfalidet S 532
Izquierdo A, see Giménez-Izquierdo J, et al. 638

Jäger W, see Freiburg A, et al. 427
Jank A, see Schmoranzer H, et al. 251
Jedlinski J, Borchardt G, Riediger C: The effect of implanted yttrium on the oxidation behaviour at high temperatures of a Fe-Cr-Al alloy containing zirconium 432
Jenett H, Grallath E, Riedel R, Strecker K, Gijbels R, Kennis P: Comparative bulk, surface and depth profile analyses on AlN and SiC-coated B_4C-powders 265
Jenett H, see Bredendiek-Kämper S, et al. 346
Jorke H, Herzog H-J, Kibbel H: Growth and characterization of Si/Sb superlattices 176
Juez-Lorenzo M, see Kolarik V, et al. 436
Jung K, see Dötter W, et al. 353
Jung K, see Keller G, et al. 349

Kaltenbrunner T, see Angeli J, et al. 140
Karduck P, Ammann N, Esser HG, Winter J: Quantitative electron probe microanalysis for the characterization of thin carbon-boron layers in fusion devices 315
Karl H, see Ziegler C, et al. 308
Kassing R, see Oesterschulze E, et al. 70
Katterwe H, see Wenz HW, et al. 155
Keller G, Barzen I, Erz R, Dötter W, Ulrich S, Jung K, Ehrhardt H: Crystal structure, morphology and composition of magnetron sputtered tungsten carbide films 349
Keller G, see Dötter W, et al. 353
Kellner F, see Stobiecki F, et al. 365

Kennis P, see Jenett H, et al. 265
Kibbel H, see Jorke H, et al. 176
Kinder H, see Ziegler C, et al. 308
Kip GAM, see Lisowski W, et al. 196
Kirner UK, Schierbaum KD, Göpel W: Interface-reactions of Pt/TiO_2: Comparative electrical, XPS-, and AES-depth profile investigations 416
Kitada K, see Oguma K, et al. 545
Klockenkämper R, see Bubert H, et al. 245
Klosowski J, Mai H, Oertel G, Procop M, Völlmar S: Peculiarities of AES-depth profiling results from multilayered X-ray monochromators 171
Knobloch H, see Knoll W, et al. 272
Knobloch T, see Engewald W, et al. 641
Knoll W, Hickel W, Sawodny M, Stumpe J, Knobloch H: Novel optical techniques for the analysis of polymer surfaces and thin films 272
Knoth J, see Weisbrod U, et al. 83
Kolarik V, Juez-Lorenzo M, Engel W, Eisenreich N: Application of a fast X-ray diffraction method for studies of high temperature corrosion of steel surfaces 436
Kolb G, Salbert T, Abstreiter G: Raman-microanalysis of strain and crystal orientation in laser-crystallized silicon 166
Kolitsch A, Neelmeijer C, Richter E, Scholz U: Implantation assisted deposition of hard carbon coatings on steel substrates 357
Komljenović J, see Radić N, et al. 592
Koschmieder H, see Priggemeyer S, et al. 343
Kovářová H, see Stulík J, et al. 645
Kozuka S, see Oguma K, et al. 545
Krehan A, see Gebhardt R, et al. 332
Krismer R, see Krivan V, et al. 550
Krivan V, Hausbeck R, Wilhartitz P, Krismer R, Ortner HM: Analysis of tantalum by ICP-AES involving trace-matrix separation 550
Krug D, see Deutschmann L, et al. 339
Krupp A, see Niessner R, et al. 207
Kuroda R, see Oguma K, et al. 545

Lahanier C, see Revel G 615
Lahl H, Lavanchy Y: Hydrogeological application of trace element analysis with ICP-AES for the characterization of groundwater categories at the foot of the Swiss Jura between Geneva and Lausanne 559
Landwehr G, see Wenzel M, et al. 189
Lange-Gieseler R, see v Criegern R, et al. 60
Lange-Gieseler R, see Wangemann K 49
Langenscheidt E, Roessler K: Optical reflection spectroscopy of mineral and ice surfaces in comet simulation experiments 95
Lavanchy Y, see Lahl H 559
Lazzeri P, see Moro L, et al. 20
Leiste H, see Halbritter J, et al. 320
Leskovšek H, Grm A, Marsel J: Head space gas-chromatographic determination of residual ethylene oxide in cosmetic products 720
Lichtenberg WJ, see Wenz HW, et al. 155
Liebich V, Grötzschel R: Chemometrics-aided RBS analysis of thin films 325
Liebich V, see Danzer K, et al. 511
Liebich V, see Doerffel K, et al. 519
Lill T, see Gericke M, et al. 31
Lindner U, Papp H: XPS and TEM characterization of pure and Th, Pr or Ce oxide containing Rh/SiO_2 catalysts 387
Lipp M, see Schmidt UC, et al. 260
Lisowski W, van den Berg AHJ, Kip GAM, Hanekamp LJ: Characterization of tungsten tips for STM by SEM/AES/XPS 196
Loeb HW, see Walkow B, et al. 248
López Sanchez JF, see Rauret G, et al. 631
Lorenz M, Bothe H-K, Becker S, Dietze H-J: Stoichiometric and structural analyses of thin high-T_c superconducting Bi-Sr-Ca-Cu-O films on silicon 292

Macela A, see Stulík J, et al. 645
Madej A, Dyrek K, Mattusch J: Preparation and evaluation of the quality of standards for quantitative EPR measurements of spin concentration 707
Magonov SN, see Stocker W, et al. 184
Mai H, see Klosowski J, et al. 171
Mandic L, see Todorovic M, et al. 723
Marsel J, see Leskovšek H, et al. 720
Maßeli K, see Oesterschulze E, et al. 70
Mathes HJ, see Halbritter J, et al. 320
Mattern-Klosson M, see Berresheim K, et al. 121
Mattusch J, see Madej A, et al. 707
Mayer A, see Schmoranzer H, et al. 251
Mazurkiewicz M, see Nickel H, et al. 421
Meihofer M, see Stocker W, et al. 184
Meisel W, see Ternes T, et al. 79
Meisel W, Tippmann-Krayer P, Möhwald H, Gütlich P: CEMS/XPS study of iron stearate Langmuir-Blodgett layers 289
Mezey LZ, Hofer W, Novacek P, Varga P, Giber J: The influence of environmental oxygen on the surface composition of binary substitutional alloys 383
Miethe K, see Hoinkis O, et al. 101
Mir JM, see Castillo JR, et al. 611
Möbius C, see Crespi F, et al. 644
Möhwald H, see Meisel W, et al. 289
Mößner C, see Walkow B, et al. 248
Monzó J, García-Antón J, Guiñón JL: Influence of elemental sulfur and mercaptans on corrosion of copper strips in the ASTM D-130 test by means of electronic microscopy (SEM) and energy dispersive X-ray (EDX) 606
Moro L, Lazzeri P, Ottaviani G, Bacci L, Queirolo G, Anderle M: SNMS studies of ULSI gate interconnection structures 20
Moses P, see Zaranyika MF, et al. 577
Müller M, see Engewald W, et al. 641
Murray PT, see Rist O 360
Myasoedov BF, see Ryabukhin VA, et al. 636
Myasoedova GV: POLYORGS as complexing sorbents for preconcentration of trace metals 586

Nagorsen G, see Proksche H, et al. 92
Nahm W, see Gauglitz G 279
Naoumidis A, Brennfleck K: Surface analysis of functional layers for semiconductor production 235
Naoumidis A, see Nickel H, et al. 421
Neelmeijer C, see Kolitsch A, et al. 357
Nefedov VI, see Baschenko OA, et al. 597
Neumann M, see Winiarski A, et al. 296
Nickel H, Grübmeier H, Guntur D, Mazurkiewicz M, Naoumidis A: Integrating methods for the analysis of oxide scales on high-temperature alloys using GDOS and EPMA 421
Niessner R, Robers W, Krupp A: Detection of particulate polycyclic aromatic hydrocarbons by laser-induced time-resolved fluorescence 207
Novacek P, see Mezey LZ, et al. 383
Novacek P, Taglauer E, Varga P: Analysis of the surface of Pt_xNi_{1-x} alloys 136
Nyakonda C, see Zaranyika MF, et al. 577

Oechsner H: Introduction 1
Oechsner H, see Franzreb K, et al. 7
Oechsner H, see Gnaser H 54
Oertel G, see Klosowski J, et al. 171
Oesterschulze E, Maßeli K, Kassing R: Evaluation of Auger Electron Spectroscopy (AES) depth-profiles by application of Factor Analysis 70
Oguma K, Kozuka S, Kitada K, Kuroda R: Simultaneous determination of iron(II), iron(III), and titanium(IV) by flow injection analysis using kinetic spectrophotometry with Tiron 545
Olsen E, see Christensen JM 573
Ortner HM, see Krivan V, et al. 550
Ortner HM, see Wilhartitz P 125

Oswald S, Siegert L, Große G: Application of the two-dimensional lateral microanalysis by SIMS and EPMA in materials research 180
Ottaviani G, see Moro L, et al. 20

Paneli MG, Voulgaropoulos A: Determination of Ni and Co using 2-quinolinethiol by adsorptive voltammetry 716
Papp H, see Lindner U 387
Perez-Arantegui J, see Castillo JR, et al. 611
Pineda L, see Rauret G, et al. 631
Pirs J, Zalar A: Investigations of the distribution of elements in phases present in G-AlMg$_5$Si cast alloy with EDX/WDX spectrometers and AES 145
Pohris V, see Engewald W, et al. 641
Prat MD, see Giménez-Izquierdo J, et al. 638
Priggemeyer S, Koschmieder H, Van Wyk GN, Heiland W: Analysis of magneto-optical layers by ion scattering spectrometry 343
Procop M, see Klosowski J, et al. 171
Proksche H, Nagorsen G, Roß D: In situ measurement of etch velocity of layers on silicon 92

Queirolo G, see Moro L, et al. 20

Radić N, Komljenović J: Potentiometric determination of mercury(II) and thiourea in strong acid solution using an ion-selective electrode with AgI-based membrane hydrophobised by PTFE 592
Raspi G, see Vallebona G 542
Rauf T, see Züchner H, et al. 219
Rauh M, see Gebhardt R, et al. 332
Rauret G, Rubio R, Pineda L, López Sanchez JF, Beltran JL: Different strategies to assess Cu and Pb mobilization in polluted river sediments 631
Reif A, see Stein S, et al. 66
Reiter G, Hüttenbach S, Foster M, Stamm M: X-ray and neutron reflcectometry for the investigation of polymer diffusion 284
Revel G, Lahanier C: Gallo-Roman white clay figurine analysis for provenance characterization 615
Reynders B, Stratmann M: Adsorption of simple S-organic compounds on iron surfaces prepared in an UHV-system 406
Rhoderick GC: Development of a gas standard reference material containing eighteen volatile organic compounds 524
Richter C-E, see Gericke M, et al. 31
Richter E, see Kolitsch A, et al. 357
Riedel R, see Jenett H, et al. 265
Riediger C, see Jedlinski J, et al. 432
Rist O, Murray PT: Growth of TiC films by Pulsed Laser Evaporation (PLE) and characterization by XPS and AES 360
Robecke M, Cammann K: Determination of tetraethyllead and tetramethyllead using high performance liquid chromatography and electrochemical detection 555
Robers W, see Niessner R, et al. 207
Rodionova IM, see Ryabukhin VA, et al. 636
Röll K, see Stobiecki F, et al. 365
Roessler K, see Langenscheidt E 95
Roß D, see Proksche H, et al. 92
Rubio R, see Rauret G, et al. 631
Rühle M: Atomistic structure of internal interfaces by high resolution electron microscopy 369
Rumpf G, see Spichiger UE, et al. 727
Rusterholz B, see Spichiger UE, et al. 727
Ryabukhin VA, Volynets MP, Myasoedov BF, Rodionova IM, Tuzova AM: Determination of strontium radioisotopes in soils 636
Rybczynski W, see Seidel W, et al. 35

Sakurai T, see Seyama H, et al. 619
Salbert T, see Kolb G, et al. 166
Sawodny M, see Knoll W, et al. 272
Schaaf P, see Gonser U 131
Scharfschwerdt C, see Winiarski A, et al. 296
Scheithauer U: Application of the analytical methods REM/EDX, AES and SNMS to a chlorine induced aluminium corrosion 445
Schelb S, see Stocker W, et al. 184
Scherrer S, see Borchardt G, et al. 255
Schierbaum KD, see Geiger J-F, et al. 25
Schierbaum KD, see Kirner UK, et al. 416
Schild C, Wokaun W, Baiker A: On the hydrogenation of CO and CO$_2$ over copper/zirconia and palladium/zirconia catalysts 395
Schlett V, see Baalmann A 200
Schmid A, see Spichiger UE, et al. 727
Schmidt M, Steinemann SG: XPS studies of amino acids adsorbed on titanium dioxide surfaces 412
Schmidt UC, Fichtner M, Goschnick J, Lipp M, Ache HJ: Analysis of ionic solids with SNMS 260
Schmoranzer H, Mayer A, Jank A: Measurement of the electric potential in silicon solar cells employing an electron-beam tester 251
Schönborn A, Bubert H, te Kaat EH: Approaches for quantitative Auger electron spectroscopy of silicon after high dose nickel implantation 241
Schönborn A, see Bubert H, et al. 245
Scholz U, see Kolitsch A, et al. 357
Schraml-Marth M, Wokaun A, Baiker A: Characterization of V$_2$O$_5$/SiO$_2$- and TiO$_2$/SiO$_2$-mixed gel catalysts by Raman spectroscopy 87
Schubert M, see Danzer K, et al. 511
Schwenke H, see Weisbrod U, et al. 83
Seidel W, Rybczynski W, Thiel D: Influence of the primary ion incidence angle on secondary ion emission in SIMS with nitric oxide as reactant gas 35
Seyama H, Soma Y, Soma M, Takao S, Sakurai T, Tagami S: Application of secondary ion mass spectrometry (SIMS) for the analysis of asbestos fibers 619
Siegert L, see Oswald S, et al. 180
Simon W, see Spichiger UE, et al. 727
Sipos B, see Behner H, et al. 301
Sólyom A, see Hárs G, et al. 57
Soma M, see Seyama H, et al. 619
Soma Y, see Seyama H, et al. 619
Spichiger UE, Eugster R, Haase E, Rumpf G, Gehrig P, Schmid A, Rusterholz B, Simon W: Critical parameters and optimization of a magnesium-selective liquid membrane electrode for application to human blood serum 727
Sprenger D, Anderson O: Deconvolution of XPS spectra 116
Stamm M, see Reiter G, et al. 284
Stein S, Reif A, Streubel P, Tschulik A, Störi H: Depth profile investigations of metallic layer contacts to GaAs(100) and InP(100) by means of Auger Electron Spectroscopy and sputter technique 66
Steinemann SG, see Schmidt M 412
Steinhorst M, see Grabke HJ, et al. 378
Stingeder G, see Gara S, et al. 112
Stobiecki F, Stobiecki T, Kellner F, Thoma K, Röll K, Gärtner H: Analysis of Ti-N films by calibration of Ti X-ray spectra 365
Stobiecki T, see Stobiecki F, et al. 365
Stocker W, Magonov SN, Cantow H-J, Böttner H, Schelb S, Meihofer M, Tacke M: Scanning tunneling microscopy of lead selenide monocrystals and epitaxial layers on barium fluoride 184
Störi H, see Stein S, et al. 66
Stratmann M, see Reynders B 406
Stratmann M, see Wolpers M, et al. 337
Straub U, see Deutschmann L, et al. 339
Strecker K, see Jenett H, et al. 265
Streubel P, see Stein S, et al. 66
Stulík J, Kovářová H, Macela A, Bartko A: Evaluation of two-dimensional electropherograms of proteins from the spleen cells induced by experimental infection using the 2D-Analyst II Software 645

Stumpe J, see Knoll W, et al. 272
Suhr H, see Deutschmann L, et al. 339
Szpyrkowicz L, see Grandi FZ 625

Tacke M, see Stocker W, et al. 184
Tagami S, see Seyama H, et al. 619
Taglauer E, see Novacek P, et al. 136
Takao S, see Seyama H, et al. 619
te Kaat EH, see Schönborn A, et al. 241
Tejada J, see Castillo JR, et al. 611
Ternes T, Meisel W, Griesbach P, Hanžel D, Gütlich P: AES and CEMS analysis of the formation of layers on Si steel under thermal treatment in a flux of H_2/water vapour 79
Tesfalidet S, Irgum K: Heterogeneous hydride generation in a packed membrane cell 532
Thiel D, see Seidel W, et al. 35
Thoma K, see Stobiecki F, et al. 365
Tippmann-Krayer P, see Meisel W, et al. 289
Todorovic M, Djurdjic V, Mandic L: Bilirubin determination in gallstones 723
Trapp M, see Gericke M, et al. 31
Traunfellner A, see Husinsky W, et al. 12
Treichler R, see Weitzel I, et al. 43
Tschulik A, see Stein S, et al. 66
Tuzova AM, see Ryabukhin VA, et al. 636
Tyzykhov MA, see Baschenko OA, et al. 597

Ulrich S, see Dötter W, et al. 353
Ulrich S, see Keller G, et al. 349

Vallebona G, Raspi G: Recovery of thorium-Arsenazo III complex from very dilute solutions by a bubble extraction apparatus 542
van den Berg AHJ, see Lisowski W, et al. 196
Van Wyk GN, see Priggemeyer S, et al. 343
Varga P, see Mezey LZ, et al. 383
Varga P, see Novacek P, et al. 136
Vasilić Z, Fingler S, Drevenkar V: Trace enrichment of chlorophenols in human urine by C_{18} reversed-phase adsorption and by n-hexane extraction 732
v Criegern R, Lange-Gieseler R, Zeininger H: Extended SIMS capabilities by sample preparation 60
v Criegern R, see Weitzel I, et al. 43
Viefhaus H, see Wiemer D 402
Viefhaus H, see Wolpers M, et al. 337
Völlmar S, see Klosowski J, et al. 171
Volynets MP, see Ryabukhin VA, et al. 636
Voulgaropoulos A, see Paneli MG 716

Walczyk T, Hebeda EH, Heumann KG: Osmium isotope ratio measurements by negative thermal ionization mass spectrometry (NTI-MS). Improvement in precision and enhancement in emission by introducing oxygen or freons into the ion source 537
Walk P, see Halbritter J, et al. 320
Walkow B, Loeb HW, Freisinger J, Mößner C: Studies of GaAs surface roughness and organic masks resistance depending on the ion-beam energy 248
Wandelt K, see Fries T, et al. 193
Wangemann K, Lange-Gieseler R: Dynamic range optimization in SIMS analyses of arsenic and antimony dopants in silicon 49
Weber S, see Borchardt G, et al. 255
Weisbrod U, Gutschke R, Knoth J, Schwenke H: X-ray induced fluorescence spectrometry at grazing incidence for quantitative surface and layer analysis 83
Weitzel I, Hösler W, Treichler R, Cerva H, Weyl R, v Criegern R: Angle-dependent SIMS artifact in the analysis of InP/InGaAs layers 43
Wendlandt E, see Doerffel K, et al. 519
Wenz HW, Lichtenberg WJ, Katterwe H: Surface analysis and surface measuring techniques in firearm offences 155
Wenzel M, Ehinger M, Bicknell-Tassius RN, Landwehr G: A fully computer controlled, low cost STM 189
Weyl R, see Weitzel I, et al. 43
Wielunski M, see Bubert H, et al. 245
Wiemer D, Grabke HJ, Viefhaus H: Investigation on the influence of sulfur segregation on the adherence of protective oxide layers on high temperature materials 402
Wiemhöfer HD, Göpel W: Interface analysis for solid state electrochemical devices and chemical sensors 106
Wilhartitz P, Ortner HM: Bulk trace and distribution analysis in refractory and hard metals. Examples from research and development and applications in quality assurance 125
Wilhartitz P, see Krivan V, et al. 550
Wilmers M, see Berresheim K, et al. 121
Winiarski A, Wübbeler G, Scharfschwerdt C, Clausing E, Neumann M: Photoemission studies of $BaPb_{1-x}Bi_xO_3$ and $Ba_{1-y}K_yBiO_3$ crystals 296
Winter J, see Karduck P, et al. 315
Wißmann P, see Gebhardt R, et al. 332
Wokaun A, see Schraml-Marth M, et al. 87
Wokaun W, see Schild C, et al. 395
Wolpers M, Stratmann M, Viefhaus H: Structure and stability of silane modified metal surfaces 337
Wucher A, see Franzreb K, et al. 7
Wübbeler G, see Winiarski A, et al. 296
Wurz P, see Husinsky W, et al. 12

Zalar A, see Pirs J 145
Zaporozchenko VI, see Alexeyev AP 601
Zaranyika MF, Nyakonda C, Moses P: Effect of excess sodium on the excitation of potassium in an air-acetylene flame: a steady state kinetic model which takes into account collisional excitation 577
Zeininger H, see v Criegern R, et al. 60
Ziegler C, Baudenbacher F, Karl H, Kinder H, Göpel W: Interface analysis of the system $Si/YBa_2Cu_3O_{7-x}$ 308
Züchner H, Brüning T: Investigation of the deuterium solubility in niobium using secondary ion mass spectrometry (SIMS) 150
Züchner H, Dobrileit R, Rauf T: SIMS and AES measurements on the $LaNi_5$-hydrogen system 219

Short communications

Ballschmiter K, see Walter B 564

König K-H, see Vest P, et al. 566

Marín C, see Queirolo F, et al. 571

Nakashima S: Selective separation of arsenic(III) from water and sea water by flotation with thionalide 570

Ostapczuk P, see Queirolo F, et al. 571

Paneli M, see Voulgaropoulos A, et al. 568
Papaefstathiou E, see Voulgaropoulos A, et al. 568

Queirolo F, Ostapczuk P, Valenta P, Stegen S, Marín C, Vinagre F, Sanchez A: Determination of Cd in Navajuelas (*Tagelus dombeii*) by differential pulse anodic stripping voltammetry (DPASV) 571

Sanchez A, see Queirolo F, et al. 571
Schuster M, see Vest P, et al. 566
Stavroulias S, see Voulgaropoulos A, et al. 568
Stegen S, see Queirolo F, et al. 571

Valenta P, see Queirolo F, et al. 571
Vest P, Schuster M, König K-H: Solvent extraction of gold with N-substituted benzoylthioureas 566
Vinagre F, see Queirolo F, et al. 571
Voulgaropoulos A, Paneli M, Papaefstathiou E, Stavroulias S: Comparative determinations of cadmium and lead in phosphorites dissolved in nitric acid and aqua regia using differential pulse anodic stripping voltammetry and atomic absorption spectrophotometry 568

Walter B, Ballschmiter K: Elucidation of biochemical formation of C_1/C_2-(bromo-/chloro)-hydrocarbons 564

Application notes

Böhme W, see Müller H, et al. 647

Frey B, see Müller H, et al. 647

Lippold R, see Malisch R, et al. 449

Malisch R, Lippold R, Metschies M, Moats WA: Application of centrifugal vacuum concentrators in residue analysis 449
Metschies M, see Malisch R, et al. 449
Moats WA, see Malisch R, et al. 449
Müller H, Frey B, Böhme W: Improvement of detection limits in Flow Injection Analysis 647

New books 457, 650

Abstracts

1 General analytical chemistry

1.1 Fundamentals, methods, apparatus, reagents, automation, data processing 460, 652
1.2 Inorganic analysis 471, 661
1.3 Organic analysis 475, 666

2 Particular products and fields of application

2.1 Inorganic industrial products 478, 669
2.2 Organic industrial products 482, 673
2.3 Geological materials 676
2.4 Environmental matrices 486, 678
2.5 Soils, plants and agricultural technical products 682
2.6 Foods 490, 685
2.7 Pesticides 689
2.8 Pharmaceuticals and cosmetics 494, 690

3 Biochemical and clinical analysis 498, 694

Indexed in *Current Contents*

Author index 738

Subject index 746